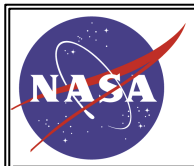


Exhibit VI
Mars Technology Program

Mars Technology Program Structure

Focused Technology

1.0	**ENTRY DESCENT AND LANDING**
1.1	Optical Nav
1.2	Guided Entry
1.3	Subsonic Parachute
1.4	Descent Propulsion
1.5	Hazard Detection & Avoidance
1.6	Touchdown Systems
1.7	EDL Mission Simulation
2.0	**SURFACE POWER**
2.1	RPS Power Generation
2.2	Solar Power Generation
2.3	Power Storage
3.0	**SAMPLE RETURN TECHNOLOGIES**
3.1	Forward Planetary Protection
3.2	Ascent Vehicle Technology
3.3	Space Rendezvous and Sample Capture
3.4	Sample Containment & Earth Return
3.5	Returned Sample Handling (MRSH Technology)

Base Technology

4.0	**REGIONAL MOBILITY AND SUBSURFACE ACCESS**
4.1	Rovers
4.2	Aerial Platforms
4.3	Subsurface Exploration
4.4	Science Operations & Visualization
5.0	**SCIENCE INSTRUMENTS AND SYSTEMS**
5.1	Mars Instrument Development Porgram (NRA)
5.2	In-situ Life Detection
6.0	**TELECOM & NAVIGATION**
6.1	Deep Space Communications
6.2	Mars Proximity Communications
6.3	Radio Based Navigation
6.4	Communication Protocols and Coding
7.0	**TRANSPORTATION/ORBIT INSERTION**
7.1	Aerocapture
7.2	Space Propulsion
8.0	**ADVANCED EDL**
8.1	Advanced EDL Technologies
9.0	**INFORMATION SYSTEMS**
9.1	MDS

Focused Technologies

Mars Focused Technologies
EDL Technology

WBS ELEMENT	DESCRIPTION - GOALS AND APPROACH
Optical navigation	Design, build and test small optical navigation camera capable of providing entry corridor accuracy of better than 0.5km. Validate ability to use Phobos as the reference target for both precision landing and aerocapture missions.
Guided Entry	Develop guided entry vehicle capable of maintaining a ballistic course from entry to parachute deployment given uncertainties in atmospheric profile, winds and aerodynamic performance
Subsonic Parachute	Demonstrate a low q low Mach number parachute with potential for EDL enhancements including paraguidance
Descent propulsion	Demonstrate descent engine systems including thrusters, throttle valve, and high flow presssure requlators for carrying out a controlled descent to the Mars surface. Recapture and improve Viking thruster technology.
Hazard Detection and Avoidance	Detect hazards such as rocks and slope that represent a hazard to the lander using an active sensor such as LIDAR or radar and develop a strategy for avoiding these hazards and directing the lander to the nearest accessible safe site
LIDAR	Demonstrate a brassboard LIDAR sensor capable of generating elevation maps of the surface of Mars from a lander descending towards the surface that can be used to detecting hazards such as rocks and steep slopes.
Robust Landing	Demonstrate a robust landing system capable of attenuating the impact of a nominal propulsive landing with hazard avoidance and tolerant to off nominal performance of both hazard detection and avoidance systems and descent systems.
EDL Mission Simulation	Conduct high fidelity end-to-end simulations of Generation 2 EDL systems to validate mission concepts. Evaluate performance and risk. Support project life cycle needs ranging from off-line mission simulation to real time mission simulation.

Surface Power

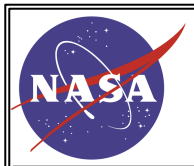
WBS ELEMENT	DESCRIPTION - GOALS AND APPROACH
Radioisotopic Power	Provide sustained presence and survivability for long duration missions on the surface of Mars through the use of radioisotopic power conversion technology. Conserve Plutonium through the use of high efficiency energy converters
Solar Power	Improve solar collection efficiency on the Mars surface by developing improved means of dust removal.
Power Storage	Improve the performance of batteries at low temperatures. Develop batteries with lower survival temperatures (need to discuss with Rao Surumpudi and update.

Mars Sample Return Technologies

WBS ELEMENT	DESCRIPTION - GOALS AND APPROACH
Forward Planetary Protection	Protect Mars from contamination from Earth-sourced organisms and preventing the introduction of Earth-sourced organisms into the returned sample. Validate the effectiveness of these techniques using precision analysis and modeling techniques.
Mars Ascent Vehicle	Inject a canister containing the sample into Mars orbit, deep space or an Earth return trajectory to accomplish the most efficient and cost effective transfer of the sample to Earth. Validate the performance and reliability of the vehicle.
Sample Tracking Rendezvous & Capture	Track, rendezvous and capture a canister containing the Mars sample in Mars orbit, deep space or in Earth orbit. Valdiate the performance and reliability of the recovery method.
Sample Containment and Earth Return	Provide containment of the returned sample, breaking the chain of contact with the Mars surface to the extent needed to meet planetary protection requirements. Validate usign Probabilistic Risk Assessment methods using ground and flight test data.
Returned Sample Handling	Retrieve the sample after landing or from Earth orbit. Contain and protect the sample during hazard assessment. Develop techniques of hazard assessment and investigation of the science value of the returned sample.

Regional Mobility and Subsurface Access

WBS ELEMENT	DESCRIPTION - GOALS AND APPROACH
Rovers	Ability to transport payload extended distance over Mars surface terrains, to provide a platform for in-situ science and a capability for sample acquisition and possibly ascent vehicle deployment
Aerial Vehicles	Ability to deploy payloads on extended flights in the Mars atmosphere primarily for the purpose of making observations of the Mars surface from a close vantage point.
Subsurface Access	Access to a range of depths in the Martian surface using drilling systems or robotic moles. These devices will bring samples to the surface or make in-situ analyses
Science Operations and Visualization	Develop software tools to assist operations of landed assets on the surface of Mars.



Base Technologies

WBS ELEMENT	DESCRIPTION - GOALS AND APPROACH
Mars Instrument Development Program	Development of Ground Demonstrated Miniature Instruments (TRL 3,4) into Space Qualifiable Hardware (TRL 5,6) Ready for Response to Mars Flight AO.
In-Situ Life Detection	Obtain evidence for past and present life on the subsurface and beneath the surface of Mars using in situ measurements Devise new techniques for life detection that make minimal assumptions about the nature of life on Mars.

Communication/Radio Navigation Technologies

WBS ELEMENT	DESCRIPTION - GOALS AND APPROACH
Deep Space Communications	Increase data return capability on “trunk line” deep space link between Mars and Earth Increase lander direct-to-Earth data rate capabilities from 1 kbps (MER) to 10 kbps
Proximity Link Communications	Provide proximity link relay communications capabilities to enable increased data return and increased connectivity with future Mars assets
Radio-Based Navigation	Develop radio-based precision approach navigation capable of sub-km entry state knowledge
Protocols and Coding	Define Mars Network communications protocol architecture capable of evolvable, interoperable connectivity

Transportation/Orbit Insertion

WBS ELEMENT	DESCRIPTION - GOALS AND APPROACH
Aercapture	Use aerodynamic lift and drag to enter Mars orbit from an approach trajectory with propulsion only used for control functions and periapsis raising
Space Propulsion	Develop lightweight chemical and electrical propulsion systems with smaller system mass and higher specific impulse.

Information Systems

WBS ELEMENT	DESCRIPTION - GOALS AND APPROACH
Missions Data Systems	Establish a unified approach to flight, ground, and test systems for EDL and landed assets.